

Abstract

Semiconductor nitride layers are produced using a corona discharge supersonic free-jet source producing an activated nitrogen molecule beam impacting a semiconductor substrate in the presence of a group III metal or impacting an oxide layer on a semiconductor substrate. The activated nitrogen molecules are of the form $N_2A^3\Sigma_u^+$. Apparatus for producing the nitride layer on the substrate includes the corona discharge free-jet source, a skimmer to collimate the N_2 beam and succeeding stages interconnected by collimators and evacuated to draw off background gases.

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